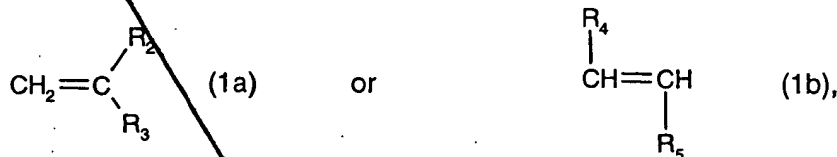


Claims:

Subst 51

1. A crosslinkable or polymerizable prepolymer that is obtainable by
 (a) copolymerizing at least one hydrophilic monomer having one ethylenically unsaturated double bond and at least one crosslinker comprising two or more ethylenically unsaturated double bonds in the presence of a chain transfer agent having a functional group; and
 (b) reacting one or more functional groups of the resulting copolymer with an organic compound having an ethylenically unsaturated group.

2. A prepolymer according to claim 1, wherein the hydrophilic monomer according to step (a) is a radical of formula



wherein R_2 is hydrogen or $\text{C}_1\text{-C}_4$ -alkyl, R_4 is $\text{C}_1\text{-C}_4$ -alkyl, phenyl or a radical $-\text{C}(\text{O})\text{OY}_9$, wherein Y_9 is hydrogen or unsubstituted or hydroxy-substituted $\text{C}_1\text{-C}_4$ -alkyl, R_5 is a radical $-\text{C}(\text{O})\text{Y}_9'$ or $-\text{CH}_2\text{-C}(\text{O})\text{OY}_9'$ wherein Y_9' independently has the meaning of Y_9 , and R_3 is
 (i) a non-ionic substituent selected from $\text{C}_1\text{-C}_6$ -alkyl which is substituted by one or more same or different substituents selected from the group consisting of $-\text{OH}$, $\text{C}_1\text{-C}_4$ -alkoxy and $-\text{NRR}'$, wherein R and R' are each independently of another hydrogen or unsubstituted or hydroxy-substituted $\text{C}_1\text{-C}_6$ -alkyl or phenyl; phenyl which is substituted by hydroxy, $\text{C}_1\text{-C}_4$ -alkoxy or $-\text{NRR}'$, wherein R and R' are as defined above; a radical $-\text{COOY}$, wherein Y is $\text{C}_1\text{-C}_4$ -alkyl, $\text{C}_1\text{-C}_{24}$ -alkyl which is substituted by hydroxy, $\text{C}_1\text{-C}_4$ -alkoxy, $-\text{O-Si}(\text{CH}_3)_3$, $-\text{NRR}'$ wherein R and R' are as defined above, a radical $-\text{O}-(\text{CH}_2\text{CH}_2\text{O})_{1-24}\text{-E}$ wherein E is hydrogen or $\text{C}_1\text{-C}_6$ -alkyl, or a radical $-\text{NH-C}(\text{O})\text{-O-G}$, wherein $-\text{O-G}$ is the radical of a saccharide with 1 to 8 sugar units or is a radical $-\text{O}-(\text{CH}_2\text{CH}_2\text{O})_{1-24}\text{-E}$, wherein E is as defined above, or Y is $\text{C}_5\text{-C}_8$ -cycloalkyl which is unsubstituted or substituted by $\text{C}_1\text{-C}_4$ -alkyl or $\text{C}_1\text{-C}_4$ -alkoxy, or is unsubstituted or $\text{C}_1\text{-C}_4$ -alkyl- or $\text{C}_1\text{-C}_4$ -alkoxy-substituted phenyl or $\text{C}_7\text{-C}_{12}$ -aralkyl; $-\text{CONY}_1\text{Y}_2$ wherein Y_1 and Y_2 are each independently hydrogen, $\text{C}_1\text{-C}_4$ -alkyl, $\text{C}_1\text{-C}_{12}$ -alkyl, which is substituted by hydroxy, $\text{C}_1\text{-C}_4$ -alkoxy, a radical $-\text{CH}(\text{OR}_{18})_2$ wherein R_{18} is hydrogen, $\text{C}_1\text{-C}_4$ -alkyl or $\text{C}_2\text{-C}_5$ -alkanoyl, or a radical $-\text{O}-(\text{CH}_2\text{CH}_2\text{O})_{1-24}\text{-E}$ wherein E is as defined above, or Y_1 and Y_2 together with the adjacent N -atom form a five- or six-membered heterocyclic ring

having no additional heteroatom or one additional oxygen or nitrogen atom; a radical -OY₃, wherein Y₃ is hydrogen; C₁-C₄-alkyl or C₁-C₁₂-alkyl which is substituted by -NRR'; or is a radical -C(O)-C₁-C₄-alkyl; and wherein R and R' are as defined above; or a five- to seven-membered heterocyclic radical having at least one N-atom and being bound in each case via said nitrogen atom; or

(ii) an anionic substituent selected from C₁-C₆-alkyl which is substituted by -SO₃H, -OSO₃H, -OPO₃H₂ and -COOH; phenyl which is substituted by one or more same or different substituents selected from the group consisting of -SO₃H, -COOH, -OH and -CH₂-SO₃H; -COOH; a radical -CCOY₄, wherein Y₄ is C₁-C₂₄-alkyl which is substituted by -COOH, -SO₃H, -OSO₃H, -OPO₃H₂ or by a radical -NH-C(O)-O-G' wherein G' is the radical of an anionic carbohydrate; a radical -CONY₅Y₆ wherein Y₅ is C₁-C₂₄-alkyl which is substituted by -COOH, -SO₃H, -OSO₃H, or -OPO₃H₂ and Y₆ independently has the meaning of Y₅ or is hydrogen or C₁-C₁₂-alkyl; or -SO₃H; or a salt thereof; or

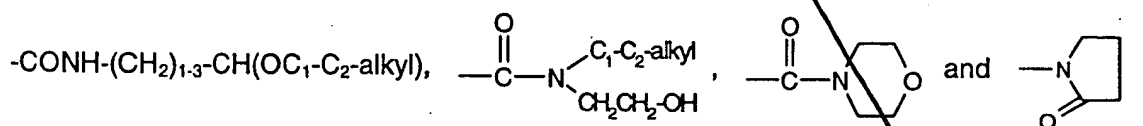
(iii) a cationic substituent selected from C₁-C₁₂-alkyl which is substituted by a radical -NRR'R''An⁺, wherein R, R' and R'' are each independently of another hydrogen or unsubstituted or hydroxy-substituted C₁-C₆-alkyl or phenyl, and An⁺ is an anion; or a radical -C(O)OY₇, wherein Y₇ is C₁-C₂₄-alkyl which is substituted by -NRR'R''An⁺ and is further unsubstituted or substituted by hydroxy, wherein R, R', R'' and An⁺ are as defined above; or

(iv) a zwitterionic substituent -R₁-Zw, wherein R₁ is a direct bond or a carbonyl, carbonate, amide, ester, dicarboanhydride, dicarboimide, urea or urethane group; and Zw is an aliphatic moiety comprising one anionic and one cationic group each.

3. A prepolymer according to claim 1, wherein the hydrophilic monomer according to step (a) is a radical of formula

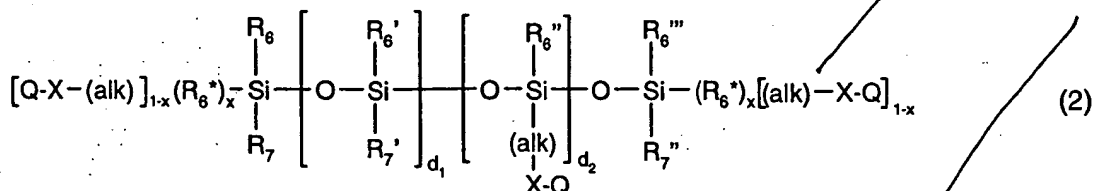


wherein R₂ is hydrogen or methyl and R₃ is a non-ionic substituent selected from -COO-C₁-C₂-alkyl, -COO-(CH₂)₂₋₄-OH, -CONH₂, -CON(CH₃)₂, -CONH-(CH₂)₂-OH,



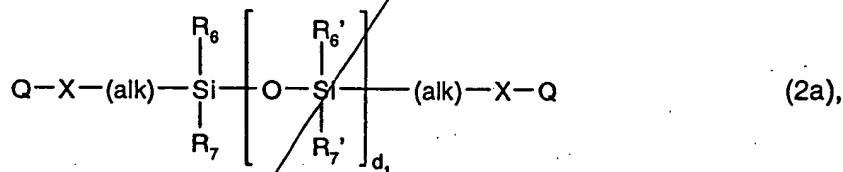
4. A prepolymer according to claim 1, wherein the crosslinker according to step (a) is a polysiloxane, perfluoroalkyl polyether or polysiloxane/perfluoroalkyl polyether block copolymer comprising in each case two or more ethylenically unsaturated double bonds.

5. A prepolymer according to claim 1, wherein the crosslinker according to step (a) is a polysiloxane of formula

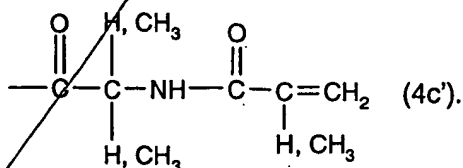
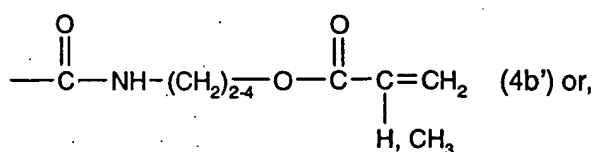
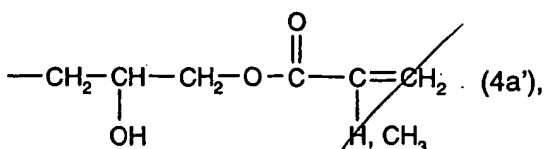
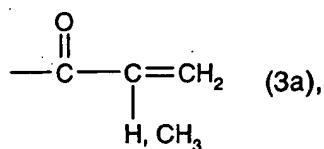


in which (alk) is alkylene having up to 20 carbon atoms which may be interrupted by -O-; X is -O- or -NR₈-, R₈ is hydrogen or C₁-C₆-alkyl, Q is an organic radical comprising a crosslinkable or polymerizable group, 80-100% of the radicals R₆, R₆', R₆'', R₆''', R₆*, R₇, R₇' and R₇'', independently of one another, are C₁-C₆-alkyl and 0-20% of the radicals R₆, R₆', R₆'', R₆''', R₆*, R₇, R₇' and R₇'', independently of one another, are unsubstituted or C₁-C₄ alkyl- or C₁-C₄-alkoxy-substituted phenyl, fluoro(C₁-C₁₈-alkyl), cyano(C₁-C₁₂-alkyl), hydroxy-C₁-C₆-alkyl or amino-C₁-C₆-alkyl, x is the number 0 or 1, d₁ is an integer of from 5 to 700, d₂ is an integer from 0 to 8 if x is 0, and is 2 to 10 if x is 1, and the sum of (d₁+d₂) is from 5 to 700.

6. A prepolymer according to claim 1, wherein the crosslinker according to step (a) is a polysiloxane of formula



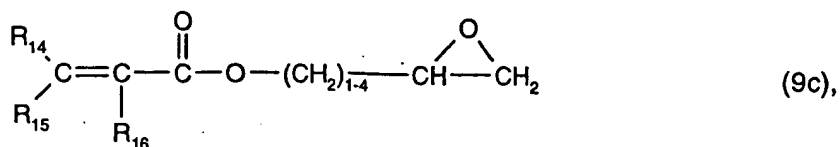
wherein R₆, R₆', R₇ and R₇' are each methyl, d₁ is an integer from 10 to 300, (alk) is linear or branched C₂-C₆ alkylene or a radical -(CH₂)₁₋₃-O-(CH₂)₁₋₃-, X is -O- or -NH- and Q is a radical of the formula

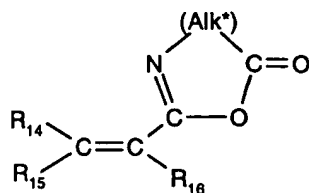


7. A prepolymer according to claim 1, wherein the functional chain transfer agent used in step (a) is an organic primary thiol having a hydroxy, amino, N-C₁-C₆-alkylamino or carboxy group.

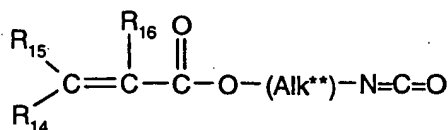
8. A prepolymer according to claim 1, wherein prepolymer according to any one of claims 1 to 6, wherein, the components in step (a) are used in a molar ratio of from 0.5 to 5 equivalents chain transfer agent : 1 equivalent crosslinker : 5 to 60 equivalents hydrophilic monomer(s).

9. A prepolymer according to claim 1, wherein the copolymer of step (a) is reacted in step (b) with a compound of formula





(9d) or



(9e),

wherein R_{13} is halogen, hydroxy, unsubstituted or hydroxy-substituted C_1 - C_6 -alkoxy or phenoxy, R_{14} , and R_{15} are each independently of the other hydrogen, C_1 - C_4 -alkyl, phenyl, carboxy or halogen, R_{16} is hydrogen, C_1 - C_4 -alkyl or halogen, R_{17} and R_{17}' are each an ethylenically unsaturated radical having from 2 to 6 C-atoms, or R_{17} and R_{17}' together form a bivalent radical $-\text{C}(\text{R}_{14})=\text{C}(\text{R}_{16})-$ wherein R_{14} and R_{16} are as defined above, and (Alk^*) is C_1 - C_6 -alkylene, and (Alk^{**}) is C_2 - C_{12} -alkylene.

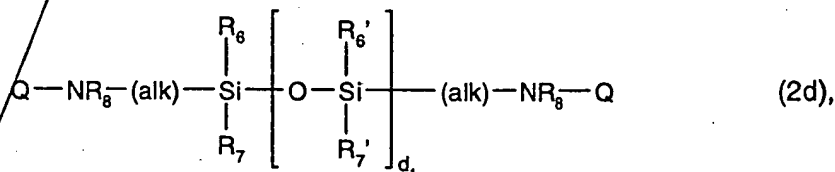
10. A process for the manufacture of a moulding, which comprises crosslinking a prepolymer obtainable according to claim 1 in a mould.

11. A process according to claim 10 wherein the moulding is an ophthalmic moulding and wherein the prepolymer is photo-crosslinked in an ophthalmic mould using visible or UV light.

12. A moulding obtainable by the process according to claim 10.

13. A moulding according to claim 12, which is a contact lens, intraocular lens, or artificial cornea.

14. A compound of formula



wherein R_6 , R_6' , R_7 , R_7' , R_8 , (alk) and Q are each as defined in claim 5.